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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,763	09/24/2003	I-Ching Chiu	42053-108USPT	4389
7590 Shell Oil Company P. O. Box 2463 Houston, TX 77252-2463			EXAMINER GOLOBOY, JAMES C	
			ART UNIT	PAPER NUMBER
			1714	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/30/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/669,763

Applicant(s)

CHIU, I-CHING

Examiner

James Goloboy

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26, 28-57 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 and 28-57 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Please note the new examiner of record.
2. Applicant's amendments filed 11/10/2006 overcome the rejections of claims 21-34 in the prior office action. New grounds of rejection are set forth below. While it is the examiner's position that the amendments do not overcome the rejections of claims 1-20, a new ground of rejection for those claims necessitated by the amendment is also set forth below. Applicant's amendments also overcome the objections and rejections under 35 USC 112 in the prior office action.

Claim Rejections - 35 USC § 112

3. Claims 48-49 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 48 depends on claim 47 but contains exactly the same limitations. Claim 49 depends on claims 47-48, and although the wording is slightly different, the scope of the claim is identical.

Claim Rejections - 35 USC § 102

Art Unit: 1714

4. Claims 1-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Duling (U.S. Pat. No. 3,843,537).

The rationale for this rejection is set forth in the office action dated 2/1/2006.

5. Claims 1-20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Duling (U.S. Pat. No. 3,597,358).

The rationale for this rejection is set forth in the office action dated 2/1/2006.

Claim Rejections - 35 USC § 103

6. Claims 21-25, 28, 31, 34-49, 52-54, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLaughlin (U.S. Pat. No. 3,161,692) in view of Hammann (U.S. Pat. No. 3,411,369).

McLaughlin, from column 2 line 63 through column 3 line 12, describes a process for the dimerization of alkylstyrene, where the alkylstyrene can be α -methylstyrene (column 2 line 67), as recited in claim 24, and the catalyst can be sulfuric acid on clay (column 3 lines 10-11), a supported acid catalyst as in claim 21. From column 8 line 35 through column 9 line 6 (Example 15 and structures A-D), McLaughlin discloses a reaction comprising contacting α -methylstyrene with a supported acid catalyst in the absence of a solvent in the presence of a free acid, as recited in claims 21(a) and 35. In column 8 lines 57-58 McLaughlin discloses that the product comprises about 95% cyclic dimer and 4% of higher-boiling polymers, meeting the limitations of claims 22-23, 28,

Art Unit: 1714

and 36-42. In column 8 lines 47-50 McLaughlin discloses that the reaction takes place at 150° C, falling within the range recited in claim 31.

The difference between McLaughlin and the currently presented claims is that McLaughlin does not disclose the hydrogenation of the cyclic dimer product. This relates to claims 21(b), 25, 34, 52-54, and 56.

In column 14 lines 26-40, Hammann teaches the hydrogenation of a cyclic dimerized α -methylstyrene in the presence of a hydrogenation catalyst, nickel on kieselguhr. This procedure meets the limitations of claim 21(b). In column 14 lines 16-25, Hammann teaches that the cyclic dimer is separated from other oligomers prior to the hydrogenation, as related in claim 34. Furthermore, because the cyclic dimer is separated, the hydrogenation product is substantially free of linear dimer, trimer, or higher oligomers, meeting the limitations of claims 43-49, 52-54, and 56. The process of McLaughlin and Hammann produces 1-cyclohexyl-1,3,3-trimethylhydrindane, as recited in claim 25.

It would have been obvious to one of ordinary skill in the art to produce substantially fully-hydrogenated cyclic dimerized α -styrene through the methods of McLaughlin and Hammann, as it produces a product with few impurities, and does not require the use of solvents, thereby creating less waste.

7. Claims 1-20, 26, 50-51, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLaughlin in view of Hammann as applied to claims 21-25, 28, 31, 34-49, 52-54, and 56 above, and further in view of Duling (U.S. Pat. No. 3,843,537).

The discussion of McLaughlin in view of Hammann in paragraph 5 above is incorporated here by reference. McLaughlin in view of Hammann discloses the preparation of a cyclic dimer of an α -alkyl styrene in accordance with claim 21, but does not disclose a continuously variable transmission fluid as recited in claims 1-20.

The discussion of Duling in the office action dated 2/1/2006 is incorporated here by reference. The use of the dimer of McLaughlin and Hammann as the "CMTMH" discloses in column 6 lines 23-24 of Duling meets the conditions of claims 1-20, 26, 50-51, and 57.

It would have been obvious to one of ordinary skill in the art to use the cyclic dimer of McLaughlin and Hammann in the fluid of Duling, as Hammann teaches in columns 12-13 the superior tractive properties of fluids comprising the cyclic dimer. Attention is particularly drawn to Table III of Hammann, in column 13.

8. Claims 29-30, 32-33, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLaughlin in view of Hammann as applied to claims 21-25, 28, 31, 34-49, 52-54, and 56 above, and further in view of Stegmann (EP 0138766 A2).

The discussion of McLaughlin in view of Hammann in paragraph 5 above is incorporated here by reference. McLaughlin in view of Hammann discloses a method of producing a cyclic dimer of an α -alkyl styrene in accordance with claims 21 and 52. McLaughlin and Hammann do not disclose the use of an acidic ion exchange resin.

Stegmann teaches a process for the production of a cyclic dimer of α -methylstyrene (see the reaction scheme on page 1). In paragraph 3 of column 5,

Art Unit: 1714

Stegmann teaches that the catalyst may be an ion exchange resin, as recited in claim 29, and further teaches that the ion exchange resin can be a sulfonated styrene/divinylbenzene copolymer, meeting the conditions of claims 30 and 55. The use of the catalyst of Stegmann in the process of McLaughlin and Hammann therefore meets claims 29-30 and 55. Additionally, it is the examiner's position that residence time and column pressure are result effective variables because changing them will clearly affect the type of product obtained. See MPEP § 2144.05 (B). Case law holds that "discovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." See *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art to use the ion exchange resin of Stegmann in the process of McLaughlin and Hammann in order to obtain high yields and purity, as taught in the included English abstract of Stegmann.

9. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hata (EP 281060 A2).

The rationale for this rejection is set forth in the office action dated 2/1/2006.

Response to Arguments

10. Applicant's arguments filed 11/10/2006 have been fully considered but they are not persuasive.

Art Unit: 1714

Applicant has amended claim 1 to place the cyclic dimer component in a product-by-process format, raising new issues requiring further consideration and search.

Applicant argues that the compositions of amended claims 1-20 are distinguishable from the Duling and Hata references because those references do not teach or suggest a fluid comprising a fully-hydrogenated cyclic α -alkyl styrene prepared substantially by the method of claim 21. However, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113.

If the process portion of the claim is given weight, the claim is still rejected over McLaughlin, Hammann, and Duling as discussed in paragraph 7 above. In this case, the new ground of rejection is necessitated by applicant's amendment.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

Art Unit: 1714

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Goloboy whose telephone number is 571-272-2476. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1714

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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